Exemption No. 8335

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

Israel Aircraft Industries, Ltd.

for an exemption from §§ 25.813(b)(3), 25.857(e) and 25.1447(c)(1) of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2004-17212

GRANT OF EXEMPTION

By letter dated February 17, 2004, Mr. A. Rogev, Director of Engineering, Aircraft Division, Bedek Group, Israel Aircraft Industries, Ltd., LOD 70100, Israel petitioned for an exemption from §§ 25.813(b)(3), 25.857(e) and 25.1447(c)(1). The exemption would allow carriage of two non-crewmembers (commonly referred to as supernumeraries) on Boeing Model 737 airplanes converted from a passenger to a freighter arrangement.

The petitioner requests relief from the following regulations:

> Section 25.813(b), at Amendment 25-88, requires that each emergency exit addressed by § 25.810(a) have adjacent assist space.
>
> Section 25.857(e), at Amendment 25-93, requires, in pertinent part, that when a Class E cargo compartment is installed on an airplane, the airplane is to be used for carriage of cargo only.
>
> Section 25.1447(c)(1), at Amendment 25-87, requires, in pertinent part, the automatic presentation of oxygen-dispensing units to occupants before the cabin altitude exceeds 15,000 feet. The total number of dispensing units and outlets must exceed the number of seats by at least 10 percent. The extra units must be uniformly distributed throughout the cabin as practicable. There must be at least two oxygen-dispensing units connected to oxygen terminals in each lavatory.

Related sections of the regulations:

Section 121.583(a) contains, in pertinent part, a listing of categories of people who may be carried on board an airplane in part 121 service without complying with all the passenger-carrying requirements of part 121.

The petitioner supports its request with the following information:

"1) Introduction

"IAI has developed and certified by the CAAI (STC No. SA136SF) and by the FAA (STC No. ST01566LA) a major modification of a B737-300 aircraft from passenger to a special freighter (SF) configuration. In relation to the above IAI has applied for and has been granted an exemption (Ref. FAA exemption No. 8174) from meeting certain requirements of FAR 25 related to the carriage of two supernumeraries on the flight deck. IAI has later submitted a request to amend the subject STC in order to add an alternate configuration, which replaces the 9g net by a 9g rigid barrier and provides seats for the two supernumeraries in the compartment created between the cargo barrier (which serves also as a smoke partition) and the flight deck.

"IAI is requesting for the amended STC alternate configuration to be granted an exemption as detailed herein, similar to the one granted for the 9g net configuration."

"The exemption is requested for all B737 aircraft modified to freighter under the IAI STC to B737-300SF, which will have a rigid 9g barrier.

"a. FAR 25 Affected Sections

- FAR 25.813 Amdt 88 *Emergency Exit Access* (b)(3) requires adequate space at one side of any other emergency exit to assist passengers in descending from the exit.

- FAR 25.857 Amdt 93 *Cargo Compartment Classification* (e) requires that when a class E Cargo Compartment is installed on an airplane the airplane is used for transport of cargo only.

- FAR 25.1447(c)(l) Amdt 87 *Equipment Standards for Oxygen Dispensing Units* requires automatic presentation of oxygen dispensing units to the passengers in case of cabin pressure altitude above 15000 ft.

"2) IAI Conversion -Configuration description with 9g rigid barrier

"a) Fight Deck Occupancy and seating arrangement

"The original IAI B737-300SF STC has been granted an exemption allowing the use of the flight deck two existing observer seats by supernumerary persons. The amended STC alternate configuration creates a new compartment aft of the flight deck and places the two supernumeraries in the original passenger aircraft existing aft facing flight attendant seats, which are mounted on the lavatory wall near door 1L. The flight deck occupants shall remain as in the original PAX aircraft definition--two crew and two observers. Total airplane occupancy shall be six persons maximum. The rigid barrier will be also the smoke partition for the occupied area of the airplane.

"b) Emergency Exits Arrangement and Accessibility (See Figure 1)

"With the rigid 9g barrier there is no need to modify the existing original aircraft emergency egress means. Both doors 1L and 1R remain active with their slides, markings and accessibility (on the 9g net configuration only door and slide 1R were available). These doors will be the primary emergency exit means for flight deck occupants and for the supernumeraries. Flight deck windows are not modified and remain in the original state (both openable from inside, window 2R also openable from outside). Due to the 9g-barrier location, however, there is no space for an attendant assist near door 1L.

"c) Oxygen Equipment

"The flight deck system is certified in the original aircraft for the four flight deck occupants.

"For the two supernumeraries seated in the supernumerary area, since the existing chemical generators supply only 12 minutes of oxygen, while in freighter smoke mode the airplane may be required to stay at 25Kft cabin altitude for a longer duration, the oxygen generators and the dropping masks have been replaced by two portable bottles with a flexible hose and a mask. The bottles and the masks are installed within reach of the seated supernumeraries. A lighted sign 'Use Oxygen' in front of the supernumeraries in combination with a warning over the audio system will be operated automatically by loss of cabin pressure at cabin altitude above 15Kft. Lavatory oxygen generator remains in original state as in the SF configuration.

"3) Requested exemption

- An exemption is requested from meeting FAR 25.813(b)(3) by not having space for assistance near the emergency exit door 1L.
- An exemption is requested from meeting FAR 25.857(e) to permit the flight of two non-crew passengers on a cargo aircraft with a class E cargo compartment.

- An exemption is requested from meeting FAR 25.1447(c)(1) by not having automatic presentation of the oxygen masks to the supernumeraries.

"4) Supporting Arguments

"a) In order to optimize the usage of the B737-300 as a cargo airplane, operators need to be able to accompany their cargo by people whose function is to take care of sensitive cargo and of loading and unloading tasks at any port of arrival. Their presence on the aircraft ensures they will be immediately available on arrival to take care of the cargo. This is very important for example in case of transport of perishable goods, items of value etc. It will also shorten the turnaround time at the airport gates and relieve some of the airport congestion.

"b) Some of the cargo items being transported may include hazardous materials, whereas the presence of personnel trained and qualified in their handling will enhance safety.

"c) Some of the locations serviced by the cargo carriers may not have ground maintenance centers capable of performing necessary tasks for the operator aircraft nor passenger flights to carry maintenance personnel to the location. The ability to transport the company maintenance personnel on the company flights increases the flexibility of operation.

"d) The requested exemptions do not reduce cabin safety, as discussed in Para 5.

"5) Cabin Safety Discussion

"The original flight deck of the B737 has been designed and certified for occupancy of four people - two crewmembers and two non-crewmembers.

"With the airplane converted to all freighter the same seating configuration remains on the flight deck.

"In the passenger configuration the flight deck occupants can use door 1R or door 1L for emergency egress, but they use them together with some additional twenty to fifty passengers coming in the opposite direction from the cabin. In the freighter configuration the flight deck occupants share the doors 1R and 1L with only two supernumeraries seated near door 1L. Thus, the level of safety provided to the supernumeraries on board is not less than that provided to passengers.

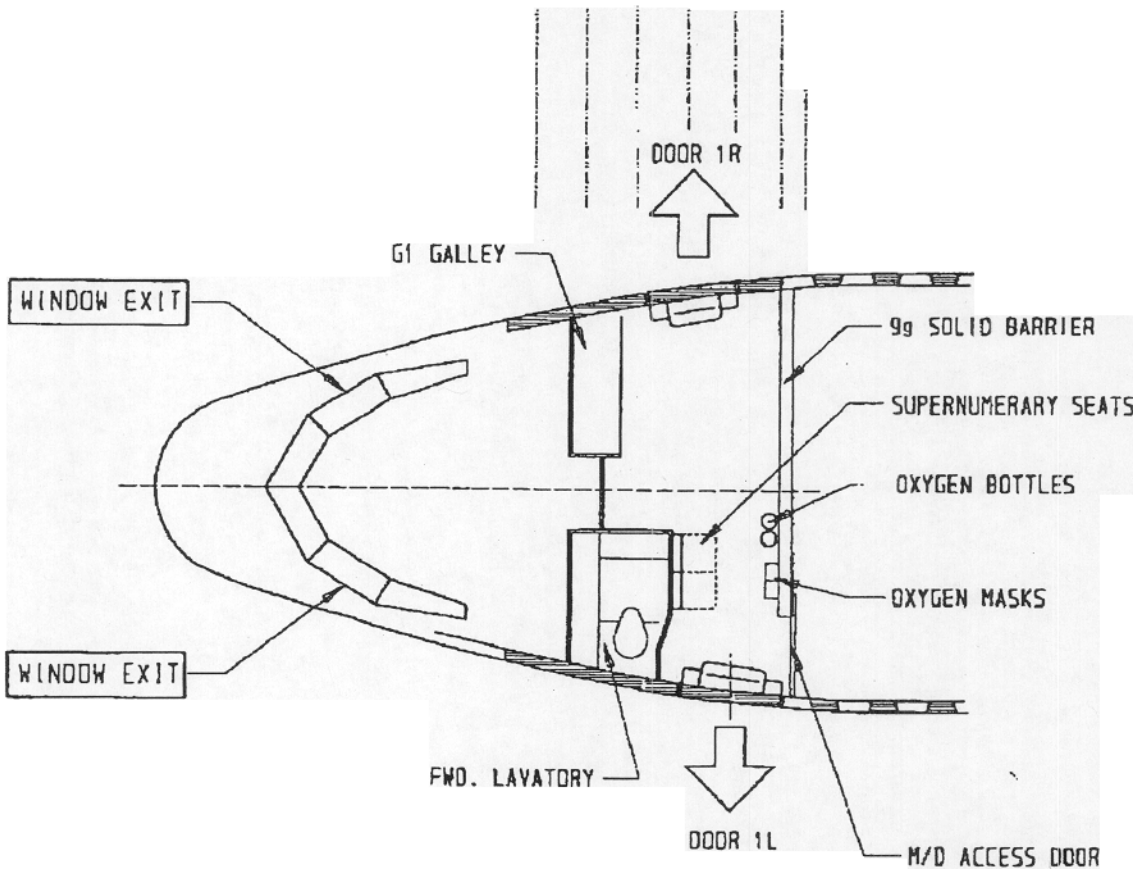
"The non-crewmembers will be limited to people in the categories of section 121.583(a)(1) thru (7). The non-crewmembers shall be trained in the necessary emergency egress procedures. These people shall be physically capable of using the rope descent means and will not need assistance by a crewmember. In addition the non- crewmembers shall be briefed preflight

about the emergency procedures by the crew. The necessary instructions shall be incorporated in the flight manual.

"The supernumeraries seated near door 1L will have automatic visual and audio warning about the need to use oxygen. The flight crew can also alert them vocally over the PA system. The training provided to the supernumeraries also ensures the appropriate level of safety.

"6) Public Interest

"The granting of the requested exemption will be in the public interest, as by allowing the carriage of the supernumerary persons aboard the cargo flights the operators will be able to optimize the safety conditions of the cargo operation, to make the operation more efficient and to improve the utility of the airplanes and the airports."



"Fig. 1: Emergency Exit Arrangement and 9g Barrier"

Notice and Public Procedure

On March 19, 2004, the FAA published a summary of this petition in the Federal Register for public comment. No comments were received.

The FAA's analysis is as follows:

The petitioner requests relief primarily from the requirements of § 25.857(e), which permits carriage of cargo only when a Class E cargo compartment is installed on the airplane. Class E cargo compartments are usually remote from the flightdeck and encompass the entire interior of the airplane. The means of controlling fires that might occur in the cargo compartment is to starve the fire of oxygen. This is done by depressurizing the airplane and maintaining an altitude that will not support combustion. Passengers are therefore not allowed on board such airplanes. The FAA has previously granted exemptions for carriage of people in addition to crew on freighter airplanes, provided certain conditions are met. These conditions have varied, depending on the airplane design and the number of people involved.

In all cases, there must be suitable means of preventing smoke penetration into occupied areas. The petitioner's design accounts for this by providing a cargo barrier, which will also act as a smoke barrier.

Because of the way that fire in the cargo compartment will be controlled, occupants should be only those people the operator has determined are physically fit, and who have been briefed on the use of emergency equipment. This limitation is consistent with previous approvals.

The certification regulations for transport category airplanes address airplane occupants as being either "crew" or "passengers." Because differences in training, physical capabilities, and other factors (such as familiarity with the airplane), the means required by part 25 to address emergency evacuation and emergency equipment differ for passengers and crewmembers. Supernumeraries are not crewmembers; therefore, they must be considered "passengers" by default, with respect to part 25.

Concerning the lack of an assist space adjacent to each exit, as required by § 25.813(b), the FAA has determined the two supernumeraries will have a higher level of training than a typical passenger, and will therefore have less need for crew assistance.

The supernumeraries should have an oxygen system that is comparable to that of passengers. However, considering the extra knowledge and training these people will have, it is not necessary to install an equivalent system. The petitioner proposes to provide supplemental oxygen to each occupant in a portable oxygen bottle. It is acceptable to provide supplemental oxygen in portable bottles; however, § 25.1447(c)(1) requires that the oxygen be "immediately available" to each seated occupant. Therefore, the oxygen bottles must be mounted on or immediately next to the seats, and each occupant must be able to put on a mask and activate oxygen flow while seated.

Section 25.1447(c)(1) also requires automatic presentation of the oxygen dispensing units. For seated passengers in typical passenger airplanes, the automatic presentation of masks throughout the cabin indicates the need to put on an oxygen mask. Supernumeraries on the petitioner's 737 airplanes will not have this indication. To provide for an acceptable level of safety, an automatically activated aural decompression signal must be immediately recognizable throughout the supernumerary seating area. Operation of this signal must be automatic with flightcrew manual action as a backup.

Supernumeraries must be trained on the location and use of the oxygen equipment and the signals for its use. Also, the supplemental oxygen equipment must be sized adequately for continuous and uninterrupted use during worst-case flight duration following a decompression.

Section 25.1447(c)(1) requires ten percent more oxygen masks than occupants. The rationale behind this requirement does not apply in this case.

The scope of this evaluation does not include consideration of supernumeraries entering the cargo compartment during flight. Such access would require additional limitations to provide an appropriate level of safety to the supernumeraries. An AFM limitation must be established that prohibits supernumeraries from being in the Class E compartment during flight.

In conclusion, the FAA has determined the existing regulations for type certification do not address occupants that are neither crew nor passengers, and an exemption from certain part 25 requirements is warranted to permit carriage of supernumeraries.

The Grant of Exemption

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, by the authority contained in 49 U.S.C. 40113 and 44701, delegated to me by the Administrator, Israel Aircraft Industries, Ltd., is granted an exemption from §§ 25.813(b)(3), 25.857(e) and 25.1447(c)(1). The exemption is granted to the extent required to permit type certification of Boeing Model 737-300 airplanes that have been converted from a passenger to a freighter arrangement. The following limitations apply and must be documented in the limitations section of the Airplane Flight Manual:

1. Occupancy outside the flightdeck is restricted to a maximum of two persons.

2. Supernumeraries are limited to the categories specified in § 121.583(a)(1) through (a)(7).

3. A flight crewmember must brief each supernumerary on the use of the exits and emergency equipment prior to each flight.

4. The operator must determine that each supernumerary is physically able to perform the necessary emergency procedures.

5. A supplemental oxygen bottle with a mask connected to it must be mounted on or immediately next to each supernumerary seat and be located so each occupant can put on the mask and activate oxygen flow while seated. The supernumeraries must be trained in the use of these oxygen units.

6. An automatically activated aural decompression signal immediately recognizable throughout the supernumerary seating area must be provided to notify supernumeraries when to don oxygen masks. The flightcrew must be provided with a manual means to activate the signal if the automatic system fails. This signal and the accompanying procedures for putting on a mask and activating oxygen flow must be included in the training and preflight briefing.

7. Supernumeraries are prohibited from being in the cargo area during flight. The preflight briefing must inform supernumeraries of this requirement.

Issued in Renton, Washington, on June 3, 2004.

/s/ Franklin Tiangsing
Acting Manager
Transport Airplane Directorate
Aircraft Certification Service